Synopsis of the Thesis entitled

Information Seeking Behaviour of Users in the Pharmaceutical Science College Libraries of South Kanara and Udupi Districts: A Study

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By

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1. Introduction

The modern trend of education is to develop a thinking person who should prove to be a self-reliant individual in every walk of life and such a kind of self-reliant individual can be created only if he is initiated into the channels, which lead him in the right direction for proper development of his mind. This can be achieved by reading, which is sure to lead him to form independent judgment to any problems he may be facing and this can be attained by having resource to the vast field of information and knowledge. It is contained in the purview of a library that is books, periodicals, and other kinds of similar recorded materials. Libraries are the repositories of books as well as the depositories of information and knowledge besides being endowed with various social and educational functions. No doubt, a good library in a locality with a good collection of reading materials carefully built up to suit the requirements of its clientele is certainly a boon and it is needless to emphasize that information is indispensable for any human activity aiming at social progress and it also serves as an instrument to improve the quality of life of the people by giving them education, information, recreation, intellectual stimulation thereby ameliorating and enriching their life in all respects. To quote Khanna (1997), "a well-equipped and well organized library with services and activities imaginatively planned and executed is a potent agency to transform a society into a creative educated, well informed and contributing to its own cultural and economic progress." The academic community appears to be the largest consumer of information as their job of teaching, learning, and research involves generating, collecting, processing, storing, disseminating, and using information in several forms for varied purposes. Thus, here we are concerned with the search for information that we call information seeking, a process in which humans purposefully engage in order to enhance their state of knowledge.

The best possible method to understand the information seeking behaviour is through 'user study.' User study mainly focuses on the 'users' to measure their information needs, user behaviour and use pattern. User study is the means for a systematic examination of the system and services; it is directly linked with the effectiveness of the library and information services as they aim at the satisfaction of a

user's needs. The key concept in the user studies are information needs and information seeking behaviour and it implies a willingness to relate a product or system design to the perceived needs of those for whom the product or system design is intended. In this context, researcher conducted an exhaustive study on information seeking behaviour of pharmaceutical science library users of South Kanara and Udupi districts of Karnataka state.

2. Meaning and Definition of the Concepts

2.1 Information

Information is a human product and is derived mainly from experience, observation, experiment, interaction, study, and research. It has certain basic qualities like existence, language, and meaning. Information is the raw material from which knowledge is derived. Today man is drowned in a flood of information but is still starving for knowledge. The term information has been derived from the two Latin terms 'forma' and 'information.' Both these words convey more or less the same meaning. The term such as thought, knowledge, facts, data, idea are used as synonymous or near synonymous for the term information. So it can be defined as "the data placed into a meaningful context for its recipients."

According to Uttor (1999), "information is data value in planning, decision making and evaluation of any program." Evans (2004) defined information as the recognition of patterns in the flow of matter and energy reaching an individual or organization. Further, in the words of Haravu (2004), "information is the facts, concepts, or instructions; any sort of knowledge or supposition which can be communicated."

2.2 Information need

The information field has developed a deepener understanding of the concept of information need and its role in information seeking and use over the time. The view that information need motivates information behaviour is an embedded assumption of the user-oriented paradigm which focuses upon what people think, do, and feel when they seek and use information. Observing and generalizing a concept of information need

which exists in an individual's head as an inner motivational state is a challenge. It can only infer the nature of information need based on the behaviour that it engenders (information seeking and use) but, over time information scientists have studied the complexities of this key concept.

Taylor (1968) first introduced the information field to the view that “information need is a personal, psychological, sometimes inexpressible, vague and unconscious condition.” He articulated four levels of information need that an individual passes through before he or she makes a formal encounter with an information system or the services of information professional. These levels are: visceral need, conscious need, formalized need, and compromised need. Taylor's work laid the foundation for a deeper conceptual understanding of the motivations or triggers for information seeking. It was the basis for subsequent insights by researchers such as Belkin, Saracevic, Ingwersen, Dervin, and Kuhlthau.

2.3 Information seeking behaviour

Information seeking may seem counterintuitive, but researchers have had less to say about this concept than they have about needs, perhaps the meaning of the term is thought to be obvious. Most accounts of empirical investigations do not bother to provide a definition of information seeking, taking it for granted as what people do in response to a need for information. It could be said that information seeking is more closely tied to the concept of "need" than it is to the notion of "information" itself. For instance, Wilson (1981) defines, “Information seeking behaviour as those activities a person may engage in when identifying his or her own needs for information, searching for such information in any way, and using or transferring that information”. However, in the words of Girija and Kishan (1983) it is defined as “Information seeking behaviour is mainly concerned with who needs what kind of information for what reason; how information is found, evaluated and used.”

3. Background of the study

It is observed that the education and research in any discipline including pharmaceutical science plays a prominent role in attaining a sustainable and equitable development of the country. Libraries and information centers plays a significant role in the growth of pharmaceutical science education and research. Fundamentally, there is not much difference between the pharmaceutical science libraries and other academic libraries in its basic functionalities and operations. However, information seeking behaviour of pharmaceutical science library users has some peculiar features which differ from other academic library users. In pharmaceutical science, the subjects are integrated with pharmaceutical industries, medical, chemical research, plant ingredient studies, management studies, marketing and advertisement, etc. The pharmaceutical science institutions are more engaged in lab oriented studies rather than classroom teaching. Time is an important element for the pharmaceutical science researchers; hence the library and information centers of the pharmaceutical science academic and research institutions should give importance to providing up-to-the-minute information to its clientele. The enormous growth in research leads to massive publications in different subject areas of pharmaceutical science but lacks in secondary tools like indexing/abstracting and reviewing types of periodicals to retrieve the primary publications. Furthermore, library and information centers of pharmaceutical science institutions were also not up to the mark in striving to get the right information at the right time to its users and it is all the more imperative that the librarian be cognizant of the importance of library information services for the fulfillment of its objectives. In this context, it is necessary to conduct a detailed study on the information needs and information seeking pattern to draft an outline model for the pharmaceutical science library users and for the librarians, to improve the information services and facilities of the institutions.

4. Literature Review

Review of literature is the most important aspect in any research work. It is a measure stating the recent output as well as the gap on a particular area of research and organized in a helpful sequence to strengthen the present research techniques. In

Literature review the researcher has brought103 reviews of most significant and relevant studies done from the year 1987 to the current year.

Bhatia and Rao (2011) conducted a survey on information seeking behaviour of students at Dev Samaj College, Chandigarh. It found that less than fifty percent of the respondents were not aware about e-resources and students of the College use search engines as a major source to access e-resources for their information needs.

Siddiqui (2011) conducted a study to examine the information seeking behaviour of B. Tech and M.B.B.S students in Lucknow. The finding of the study shows that respondents seek information for the examination purpose and to update their knowledge level. Further, text book were the most popular type of information source among all respondents followed by reference books and journals.

Khan and Farzana (2011) conducted a study on information needs and information seeking behaviour of faculty members of Bahawalpur College, Pakistan. The results of the study reveal that most of the respondents seek information for the preparation of class lectures, improving their personal competencies, to develop general knowledge. It was noticed that ICT has affected information seeking & gathering habits of library users. Further, study admired that ICT has completely changed their information seeking & gathering habits.

Gowda and Shivalingaiah (2010) conducted a study on information seeking patterns of researchers in the university libraries of Karnataka state. The study identifies gap in the need and availability of electronic resources like online journals and databases in university libraries. Further, it reveals that the electronic resources have created a positive hope among the research community in searching for information.

5. Need and purpose of the study

The need for a study on the information seeking behaviour of the users in the Pharmaceutical science college libraries of South Kanara and Udupi districts is felt because of the following aspects:

1) User studies plays an important role in understanding the growing information needs of the users. Hence, they are considered as the diagnostic studies for discovering the casual relationship between the use of information and the information system. It is

through the user study that one can come to know what kind of information is sought by the users, how they are successful in locating the information, whether the existing resources are sufficient for them. All these can be known by conducting user studies. Therefore, the need is felt for conducting periodically systematic user studies.

2) There is increasing complexity in the field of medical, pharmaceutical science studies, research, and also an exponential growth in the rate of publication of various types of literature and information output. The progress of pharmaceutical education and research depends upon the provision of the right kind of information in the right form at the right time. The key element is to systematically ascertain the needs of users in the pharmaceutical science institutions.

3) The need for the study is also felt because of the library users must be made aware of the availability of the library and information services and should be trained to make effective use of the library resources and services, particularly in this era of information technology and on-line information systems and services.

Hence, understanding the information needs as well as the pattern and making available the information to the pharmaceutical science college users is very essential. It is therefore the need is felt to make a study on the information seeking behaviour of users in the pharmaceutical science college libraries of South Kanara and Udupi districts.

6. Significance of the study

Library service is the supreme activity to attract the attention of the user community. It is more so in the case of academic libraries, in particular, pharmacy libraries. Looking at the commitment of the pharmacy library to promote quality education, it is essential on the part of the library professionals to evaluate and assess the information need and seeking behaviour of users in light of providing quality information services for the seekers to uplift pharmacy education and research.

7. Statement of research problem

The present research problem is conceived under the title "Information seeking behaviour of users in the Pharmaceutical Science College libraries of South Kanara and Udupi districts: A Study."

8. Objectives of the Study

The primary objective of the study is to assess the information seeking behaviour of users and to suggest ways and means to improve the library and information services in the pharmaceutical science college library users of South Kanara and Udupi districts.

The specific objectives of the study are:

1. To identify the nature and purpose of information seeking behaviour.
2. To study the methodologies and mode of information seeking applied by the users in the colleges under study for seeking their information.
3. To identify the information sources and types of publication used.
4. To evaluate the usefulness of the collection, services and IT infrastructure provided by the respective libraries under study.
5. To determine the use of library for information needs and the levels of satisfaction.
6. Finally, to suggest ways and means to improve the library and information services for optimum utilization of its resources.

9. Hypotheses

The following are the hypotheses formulated for the present study;

a. There exists no significant relation between genders in the mode and use of IT in seeking their informational needs.

b. The infrastructure and the services provided by the institution are not significant in accessing information, particularly digital information, in a networked environment.

c. The provision of the library and information services like CAS and SDI are not in accordance with the need of the users.

d. Designation of users is not an influencing factor on the opinion about the adequacy of digital libraries.

e. There exists significant relationship between the effective use of library resources in an IT era and user education programme.

10. Scope and Limitations of the study

The research work, "Information seeking behaviour of users in the Pharmaceutical science college libraries of South Kanara and Udupi districts: A study" is an in-depth study of user awareness, information seeking behaviour, expectations, experiences, and level of satisfaction in using the library and information facilities, resources and services provided by the Pharmaceutical science college libraries so selected for the study. The study covers the faculty members, Postgraduate students, and Graduate students of the Pharmaceutical science college libraries of South Kanara and Udupi districts.

The institutions which are included in the present study are Nitte Gulabhi Shetty Memorial Institute of Pharmaceutical Science, Srinivas College of Pharmacy, Karavali College of Pharmacy, Shree Devi Institute of Pharmaceutical Science and Manipal College of Pharmaceutical Science. Further, the study does not cover the services provided by the departmental libraries of every individual department of the institution.

11. Methodology

Methodology is a systematic way to persue research and solves the research problem. It may be understood as a science, to do research systematically. Various steps

and techniques have generally been adopted by the researcher in studying the research problem. But, it is necessary for a researcher to know not only the research problem but also the methodology and technique which suits the particular study. The Webster's third international dictionary of English language (1976) defines methodology as, "a systematic procedure, technique or set of rules employed in philosophical inquiry to a particular discipline and methodology as a process, techniques or approaches implied in the solution of a problem." In a broad sense, methodology refers to the process, principles and the procedures by which one approaches a problem to seek a solution.

The researcher adopted the survey method along with literature search to collect the primary data needed for study so undertaken. To conduct the survey, a questionnaire was designed and distributed among the users, also called as respondents, who had been identified as the 'samples' for the study. Along with the questionnaire, interview and observation techniques also been employed for data collection from the target group as a follow-up. The responses to which were kept strictly confidential. Proportionate stratified random sampling technique was adopted as an apt method to derive a suitable sample for the study. The researcher analysed the data collected using the SPSS software package and also used the APA style manual for reporting and presenting the study.

11.1 Determination of sample size

Determining the sample size for a survey is a crucial component of research design. The goal is to include sufficient numbers of samples, so that statistically significant results can be detected. Sampling is the selection of some part of an aggregate or totality on the basis of which a judgment or inferences about the aggregate or totality is made (Kothari, 1985).

The sample size for the present study is determined according to the Krejcie and Morgan (1970) formula as follows:

$$s = X^2 NP(1-P) \div d^2 (N-1) + X^2 P(1-P)$$

s = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired

confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05)

The process of selection of sample should be by providing each element in the population an equal chance of being included in the sample. As there are clear strata in the population, like undergraduates, postgraduates, and faculty members, the proportionate stratified random sampling was adopted as an apt method to derive a suitable sample for the study. The population size and the distribution of questionnaire among the different categories of respondents are given below in Table 1.

Table 1: Category wise distribution of questionnaire

S.N	Category	Population	Questionnaire Distributed	Responded	Percentage
1	Undergraduate	708	400	251	62.75
2	Postgraduates	71	071	60	84.50
3	Faculty	145	145	106	73.10
Total		924	616	417	67.70

From Table 1, it can be perceived that the total population is divided into strata based on 3 criteria, viz., undergraduates, postgraduates, and faculty members. The total population of the study is 924, including 708 under- graduates, 71 postgraduates, and 145 faculty members. The required sample size for the survey, according to the formula mentioned above is 417; it includes 251 UG students, 60 PG students, and 106 faculty members. However, a total of 616 questionnaires were distributed among 400 undergraduates, 71 postgraduates, and 145 faculty members of the pharmaceutical science library users under study.

Once the sample size has been determined, maximum attention is taken while selecting the elements of the sample. Table 2 reflects the distribution of the sample size among the strata and elements of the study.

Table 2: Distribution of sample size among the strata and elements

Institution	Designation			Total
	Undergraduate	Postgraduate	Faculty	
Manipal College of Pharmacy	59	29	28	116
	23.50%	48.33%	26.41%	27.82%
NGSM Institute of Pharmaceutical Science	53	22	24	99
	21.11%	36.67%	22.64%	23.74%
Srinivas College of Pharmacy	50	9	21	80
	19.92%	15.00%	19.81%	19.18%
Karavali College of Pharmacy	47	0	18	65
	18.73%	0	16.98%	15.59%
Shree Devi institute of Pharmaceutical Science	42	0	15	57
	16.74%	0	14.16%	13.67%
Total	251	60	106	417
	100%	100%	100%	100%

According to Table 2 the highest numbers of samples were taken from the Manipal College of Pharmacy by taking into consideration the number of courses and population of the institute. As many as 59 (23.50%) undergraduates, 29 (48.33%) postgraduates, and 28 (26.41%) faculty members were considered as sample from the Manipal College of Pharmacy. The second largest group of samples, i.e., 99 (23.74%) is taken from NGSM Institute of Pharmaceutical Science, which includes 53 (21.11%) undergraduates, 22 (36.37%) postgraduates, and 24 (22.64%) faculty members. Further, the sample taken from Srinivas College of Pharmacy is 80 (19.18%), in that 50 (19.92%) are undergraduates, 9 (15.00%) are postgraduates, and 21 (19.81%) are faculty members of the institute. Finally, the number of samples considered from the Karavali College of Pharmacy and the Shree Devi Institute of Pharmaceutical Science are 65 (15.59%) and 57 (13.67%), respectively, which is significant with regard to the population and courses of the institutes.

11.2 Pilot study

A pilot study is an important part of the questionnaire construction process. It is nothing but pretesting the research instrument in conditions as similar as possible to the research, but not in order to report the results but rather to check for glitches in the wording of questions, lack of clarity of instructions, etc. Gay (1981) stated that "pre-testing the questionnaire yields data concerning instrument deficiencies as well as suggestions for improvement. Pre-test subjects should be encouraged to make comments and suggestions concerning directions, recording procedures and specific items which are not listed in the questionnaire."

The researcher has done this exercise mainly to identify the pit falls, if any, or to find out deficiencies inherent in the design of the questionnaire, and to improve it to obtain the relevant data to achieve the desired results. For this purpose, a draft of the questionnaire was distributed among 25 heterogeneous user group of a sample population of NGSM Institute of Pharmaceutical Sciences, Mangalore. Of the 25 samples who participated in the pilot study, 9 student population and 4 faculty members suggested to provide explanation /meaning of certain technical terminology used in the questionnaire (e.g., CAS, SDI, OPAC etc..) in order to avoid ambiguity and prevent misinterpretation of the questions while filling in.

However, any revision felt necessary by the pilot study sample were minor, as stated above. Accordingly, necessary incorporations were made in the questionnaire based on their suggestions.

11.3 Contents of questionnaire

The researcher emphasizes the importance of pre-testing and revising the questionnaire, prior to the original study. During the pilot study, it was observed that approximately twenty minutes are required to fill in the questionnaire by the respondents. A few suggestions and comments were received from the respondents of the pilot study. The questionnaire was revised taking them into consideration and the questions were framed as simple as possible.

The covering letter attached to the questionnaire, briefly introduced the research topic, objective, and value of the study. It assured the respondents that the data furnished by them will be kept confidential and will be used for research purposes only. The questionnaire was divided into two parts, part - A' of the questionnaire sought personal basic information from the respondents such as age, gender, name of the organization, designation, etc.; part - B' contained 25 questions pertaining to the reason and purpose of seeking information, frequency of library visit, adequacy of library services and facilities, information seeking habits, problems encountered, etc. Majority of the questions included in the questionnaire are structured with multiple choice answers. The researcher used Likert's five point scale for user opinion questions such as adequacy of infrastructure, online databases, information services, library collections, etc. An open ended question had been asked at the end to provide or express specific suggestions / comments regarding improvement / lacunae in existing services/ resources. Since the maximum number of sample population participating in the study were undergraduates, all the questions were framed in such way that they could be easily understood by the respondents.

11.4 Questionnaire canvassing

The questionnaires were given to the respondents personally and were collected from them the next day. If any of the respondents was willing to fill up the questionnaire immediately, the investigator waited until it was filled up and collected the same from the respondent. At that time, no time limit was prescribed for the completion of the questionnaire. The respondents took fifteen minutes to twenty minute to fill it up. The doubts raised by the respondents were clarified. They were assured that the data provided by them would be kept strictly confidential and used for research purposes only. The respondents were not required to put their signatures or to give their names on the questionnaire which might in any way reveal their identity. Hence, it was assumed that they did not have any reason to distort their answers. Every effort was made to get as reliable data as practicable from them. The entire data needed for the study was collected from June 2011 to December 2011.

11.5 Analysis and reporting of data

Analysis in research work is the process of bringing order, structure and meaning to the raw data collected. The descriptive information collected through the questionnaires has been coded using a coding structure developed for the data processing. After transforming the data into numerical form, it was fed into the computer using MS-Excel programme with utmost care and the print outs were checked to rectify the typographical as well as other errors. The excel data sheet was then imported to the SPSS software for the purpose of analysis and statistical measures. Means, standard deviations, simple and multiple correlations, 'T' tests of significance, ANOVA and Chi-square test were employed in case of inferential statistics.

Reporting of the research work, that is, communication of research result is an important aspect of research. The data was presented and reported with the help of tables and figures, wherever necessary. The bibliographic detail of the references cited in each chapter is given at the end of each chapter. The investigator used the APA Style manual for reporting.

12. Major findings and observation

12.1 Profile of respondents

The respondents profile-background information is very important to know and understand their information seeking behavior. For the respondents profile data the researcher collected the background information of the respondents which will help to understand the seeking pattern of the users with respect to their age, gender, and designation. The profile of the respondents belonging to the five pharmaceutical science colleges under study shows that:

- The sample consists of 266 (63.79%) males and 151(36.21%) of females It shows that the majority of the library users under study belong to the male gender.

- The age-wise distribution shows that 307 (73.62%) respondents of the survey of the 417 belong to the age group of 18 to 25. The next bigger group belongs to the age group of 26-35, i.e., 77(18.47%) respondents of the total sample.
- Designation-wise distribution of the sample shows that there are 251(60.20%) respondents belonging to the undergraduate students group. Postgraduate students comprise 60(14.40%) of the total sample and 106(25.40%) respondents belong to the faculty member category.

12.2 Channels of seeking information

It has been found that;

- The internet is the highly preferred channel of information seeking. 198(47.50%) of the respondents mentioned the internet as a complete preference for their information seeking.
- The traditional method of seeking information through the library is not lagging behind, since 189 (45.30%) of the respondents prefer their mode of information seeking through the library.
- The other important channels are – discussion with experts within the institute, i.e., 153(36.70%) and equal percentages-36.70% of the respondents also seek information by attending seminars/conferences.

12.3 Mode of acquiring current information

It is observed that;

- The majority 171(41.01%) of the respondents use the current issues of print journals to acquire current information in their subject area. The next larger group of 96(23.02%) respondents prefer the internet/E-mail alerts as the mode of acquiring current information
- Further, as many as 91(21.82%) of the respondents depend on online journals for current information, i.e., 55(20.68%) of the male and 36(23.84%) female respondents belong to this category.

12.4 Purpose of visiting library

It is prominently noted;

- Majority 309(74.10%) of the respondents visit the library to read books. As many as 187(70.30%) of the male respondents and 122 (80.79%) of the female respondents opine the same.
- The next large group 32(7.67%) of respondents visit the library for the purpose of reference, followed by to read journals/magazines, i.e., 29(6.95%). It can be seen that most of the respondents are utilizing the traditional services of the library.
- Finally, 11.67% postgraduate students and 9.43% of the faculty members use the library to read research articles and only 4.78% of the undergraduates make use of the library for this purpose.

12.5 Time spent in library

It found that;

- Majority 180(43.15%) of the users spend 30 minutes to 1 hour in the library, i.e., 110(41.35%) male and 70 (46.36%) female respondents remain in the library for 30 minutes to one hour. 54(12.94%) remain in the library for less than 30 minutes, of which 35(13.16%) are male and 19(12.58%) are female users. However, 47 users remain in the library for two to three hours, whereas only 18 remain for more than three hours.
- The age groups below 35 vary in their duration spent in the library. The majority spend from 30 minutes to 2 hours in the library. Among those belonging to the age group above 45 the majority spend time in library up to one hour.

12.6 Adequacy of computer facility for information seeking

The study has revealed that;

- Only 82(19.66%) of the 417 respondents agree to the fact that there is adequate number of computers in the library. 172 (41.25%) respondents have not responded about the adequacy of the computers.

- It can be seen that almost equal percentages of both genders agree positively on this aspect. As much as 19.17% male and 20.53% female respondents agree to this factor.

- There are 236 of the 307 respondents belonging to the age group of 18-25 who are dissatisfied with the adequacy of the computers in the library. Respondents of the age group of 26-35 also making the majority, i.e., 68 out of 77 are dissatisfied with the present scenario regarding the inadequacy of the computers.

12.7 Adequacy of internet facility

The study has revealed that;

- The vast majority of the respondents agree that the internet facility provided by their respective institutions is adequate. As many as 260(62.35%) respondents are of this opinion of which 171(64.28%) are of male and 89(58.94%) are female respondents.

- 101(24.22%) respondents do not agree that the internet facility provided to them is adequate. As much as 60(22.56%) male respondents and 41(27.16%) female respondents completely disagree about the adequacy of the internet facility.

- The designation-wise distribution of opinion shows that the faculty members are happy with the internet facility provided to them, i.e., as many as 47(44.34%) of the respondents are 'Strongly agree' with the internet facility provided to them and 27(25.47%) are 'Agree' with regard to the adequacy of the internet facility. Further, there are 151(60.16%) undergraduate respondents and 35(58.33%) postgraduates who have positively agreed on the adequacy of the internet facility.

12.8 Journal archive facility

It is observed that;

- The analysis of the data shows us a very grim picture about the journal archival facility. Of 477 respondents, only 102 agree that they are having adequate journal archives in their library. This amounts to 24.46% of the total sample. There is no huge difference when the two genders are considered. Only 62(23.31%) males

and 40(26.49%) females feel that they have an adequate journals archive in their library.

- Among the undergraduates 173 (68.92%) out of 251 do not agree that they had adequate journals archive support. Similarly, 86.67% of the postgraduates and 84.90% of the faculty members also state that they are not happy with journals archive facility.

12.9 Reprographic facility

It is found that;

- Only 141(33.81%) of the respondents agree that they are provided with adequate photocopying facility. 89(33.46%) males and 52(34.44%) of females agree to it. Also 63(23.68%) males and 32(21.19%) females did not provide any response in this regard.

- 108(43.03%) of the undergraduates agree that adequate photocopying facility is provided. Whereas only 12(20.00%) among the postgraduates, and 21(19.81%) among the faculty members.

- Age group-wise analysis reveals that 121(39.41%) of the respondents belonging to the age group of 18-25 agree that they have adequate photocopying facility in the libraries. Only 15.58% of the age group of 26-35 have agreed to this. None of the respondents of the age group of 46-55 agreed to this.

12.10 Current Awareness Services

The study has revealed that;

- 155(37.17%) of the sample agree with the statement that there are adequate current awareness services provided to them, of which 90(33.83%) are males and 65(43.05%) females.

- Undergraduates are the largest group agreeing to the fact that there is adequate current awareness facility. It is 40.24% of the total 251 undergraduates.

- 115(37.46%) of the age group of 18-25 agree that adequate Current Awareness Services are provided. But this is only 25.98% in that 26-35 age group.

12.11 SDI Services

The study has shown that;

- 183(43.89%) users under survey agree that they have adequate SDI services provided to them. In that 105 are males and 78 are female respondents. But, the higher number of 197(47.25%) respondents do not agree that adequate SDI services are being provided.
- 50% of the undergraduates feel that they are provided with adequate SDI services. As many as 125 out of 251 undergraduates share this opinion. But it is only 25% in the case of postgraduates and 40.57% in the case of faculty members.

12.12 Digital library service and facilities

It is revealed that;

- Majority, 167(40.05%) of the users are not satisfied with the digital library services. Further, a large group of respondents from each group did not have an opinion. As much as 22.71% of the undergraduates, 28.33% postgraduates, and 34.91% faculty members have not provided any opinion on this.
- Only 38.25% undergraduates, 20% of the postgraduates, and 29.24% of faculty members feel that they are served with adequate digital library facility.
- Only 35.51% respondents belonging belong to the age group of 18-25 agree with the adequacy, whereas it is less than 25% in the other two cases.

12.13 Adequacy of e-resources

It found that;

- A minority agree with the statement that they are provided with adequate electronic resources and services. This amounts to 139 (33.33%) of the total sample. The gender-wise analysis shows that 84(31.58%) of the males and 55(36.42%) of the female respondents agree that adequate e-resources are

available. The majority, i.e., 186(44.60%) of both genders believe that they are not provided with adequate e-resources facility and services. 92(22.06%) respondents did not give any opinion.

- The undergraduates feel that they had adequate e-resources in their libraries, i.e., 41.83%. Almost an equal percentage of undergraduate respondents disagree to this. It can be noted that only 15% of the post graduate and 23.59% of the faculty members agree that adequate e-resources facility are being provided.
- The age group of 18-25 provides the highest percentage (37.46%) who agrees with the adequacy of e-resources available in the libraries. Only one person belonging to the age group of 46-55 says that he/she is provided with adequate e-resources and facility.

12.14 Awareness of online databases

The study has revealed that;

- Among the various databases available online 342(82.01%) of the users are aware of only Science Direct journals from their Elsevier publishers. The reason might be that Science Direct carries large quality content for the science subject. Compared to Science Direct, other e-journal databases are consulted by a meagre proportion of the sample.
- A designation-wise analysis of the awareness of e-journals also shows that majority are aware of the Science Direct journal. As much as 92.45% of the faculty members and 91.67% of the postgraduates were aware of the Science Direct database. However, the percentage is comparably low among the undergraduates.
- The second largest group of 20(4.80%) people comes under a group who are aware of the presence of annual reviews. 18 students and only 2 faculty members are aware of this. Further, it is noted that 35(8.39%) members of the sample were not aware of any e-journal databases being available in the library.

12.15 Information seeking habits

It is worth mentioning that;

- Reading articles/books is highly preferred 312(74.82%) among all other information seeking habits. As much as 207 male and 105 females opted for this as a preferred information seeking habit.
- The second largest group i.e., 225 among 417 respondents indicated that conversing with colleagues / friends or other experts in the institute and searching free e-resources through different search engines as their preference to gather or seek information. The discussion forum/list servs is found to be the lowest ranked option by both the gender, i.e., 75 of the 417 respondents.

12.16 Attending courses/training on e-resources

It is observed that;

- Majority 297(71.22%) of the respondents opined that they did not get training to access e-resources of which 173(65.04%) are male and 124(82.12%) are female respondents. Only 120(28.78%) of the respondents have said that training courses on e-resources been attended. This includes 93(34.96%) of the male respondents and 27(17.88%) of the female respondents.
- But, it can be seen that more of the faculty members have attended such courses than the other two groups. As much as 43(40.57%) of the faculty members had a course on e-resource, whereas only 23(38.333%) of the postgraduates had attended the course. In the case of undergraduates, the number is very meager.

12.17 Problems encountered while seeking information

It is prominently noted;

- The major problems encountered by the respondents are lack of infrastructure, i.e., 128(30.69%), followed by comprehensive book collection-64 (15.34%), and lack of printed journals-48(11.02%). 75(58.59%) male respondents and 53(41.41%) female respondents categorically mention that lack of infrastructure is

a major hurdle in accessing library resources and services. Further, 44(68.75%) male and 20(31.25%) of the female respondents indicated that lack of a comprehensive book collection is the second major problem encountered while seeking information.

- The other problems encountered are lack of instructions by library staff 37(8.87%), lack of computers 35(8.39%), lack of adequate e-resources 29(6.95%), lack of reading space 18(4.32%), lack of internet connectivity 14(3.36%), insufficient library timings 14(3.36%), lack of cooperation by the library staff 11(2.64%), and the lack of proper orientation programme 6(1.44%).

12.18 User education program

It revealed that;

- 371(88.97%) respondents from both the genders gave a negative result i.e., 233(87.6%) male respondents and 138(91.4%) of female respondents have mentioned that they have not received proper orientation or any user education program at the time of admission or at a later stage.

- 371(88.97%) of the respondents opined that user education program is necessary to use the library resources and facilities effectively. As much as 58(96.70%) postgraduates, 98(92.50%) of the faculty members, and 215(85.70%) under graduates have categorically opined the same.

12.19 Overall opinion on library resources

It has been found that;

- 255(61.1%) of the respondents opined positively about the library resources. As much as 76(18.20%) opine that the resources are excellent and 63(41.70%) opine as good. Further, the percentage of respondents who opine the resources as poor are only 35(8.40%) and there is not much contradiction between the two genders on their opinion about the library resources. There are 78(73.6%) faculty members, 40(66.70%) postgraduates and 137(54.60%) undergraduates say that the resources are good and excellent.

12.20 Overall level of satisfaction

It points out that;

- Majority, i.e., 171(41.00%) of the respondents are satisfied at an overall level of 61-80%, followed by 136(32.94%) respondents with 41-60% of satisfaction level. The gender-wise division of the satisfaction level indicates that 69(45.69%) female and 102(38.34%) males were satisfied by the overall level of 61-80%.
- 38(63.33%) postgraduates are highly satisfied by an overall level of 61-80%, and 32(30.18%) faculty members at 80-100% satisfaction level with regard to the library services and facilities.

12.21 Findings in relation to hypothesis

The entire hypotheses formulated in the present study are tested and results are shown as below:

Hypothesis 1: There exists no significant relation between the genders in the mode of and use of IT in acquiring their informational needs.

Respondents of the survey opined that they seek various modes to acquire information. The data was analysed to find if there exists any relation between the gender of the respondent and the mode of acquiring information. The test of correlation (Pearson correlation = -0.0401 for significance value 0.4135) shows that there exists no relation between the variables 'Gender' and 'Mode of acquiring the current information.'

Further, it was tested again to know if there is any significant difference between genders and use of IT in acquiring their required information. It was tested by Chi-Square test and found the critical value for x^2 = 0.05 level of significance and 2 degrees of freedom is 5.99. As the computed value was greater than the critical value, the goodness to fit test was upheld. It proved the hypothesis that two genders do not vary significantly in their opinion that IT has influenced their information seeking behaviour. Hence, both the tests proved that the hypothesis is positive and sustained.

Hypothesis 2: The infrastructure and services provided by the institution are not significant in accessing information, particularly digital information in a networked environment.

Data analysis reveals that the infrastructure facilities like the computer facility, the LAN facility, and reading room facilities provided by the respective institutions are not satisfactory. This was tested using the Chi-Square Test and found that for 8 degrees of freedom, the χ^2 value computed was 17.62296. The critical value for χ^2 for 0.05 level of significance and 8 degrees of freedom is 15.51. The higher number of computed value than the critical value proves that the opinion of the users on the availability of computers in the library vary significantly between different designation status of the respondents. Further, the statistical analysis on the adequacy of LAN facilities and reading room facilities reveals that only 36.45% and 11.51% of the respondents agreed that the LAN and reading room facilities are adequate. This lower percentage of response towards adequate infrastructure facilities of the respective institutes under study proves that the hypothesis is sustained.

Hypothesis 3: The provision of the library and information services like CAS and SDI are not in accordance with the need of the users.

Respondents of the survey were asked to note whether the library services like CAS and SDI are adequate or not. The empirical data on their opinion was further analyzed to find if there exists any relation between the designation of the respondent and their opinion on the adequacy of CAS and SDI services. ANOVA test was used to test the adequacy of CAS and SDI among the respondents. The test of ANOVA for CAS services (ANOVA=8.873 (5), F=2.450, Sig=.033) shows that there exists a significant difference among the respondents about the opinion on adequacy of current awareness services provided by the respective libraries. The test of ANOVA for SDI services (ANOVA = 12.672 (5), F=3.544, Sig=.004) shows that there exists a significant difference among the respondents about the opinion on adequacy of SDI services provided by the respective libraries. It proves that the information services like CAS and SDI are not accordance with the need of the users. Hence, the research hypothesis is sustained.

Hypothesis 4: Designation of users is not an influencing factor on the opinion about the adequacy of digital libraries.

The empirical data on this query was analysed to find if there exists any relation between the designation of the respondent and their opinion on the adequacy of the digital libraries. The test of Correlation (Pearson correlation = 0.1373 for significance value 0.0050) shows that there exists a significant relation between the variables 'Designation' and 'Opinion on the digital library facility.' Hence, the original hypothesis is rejected and the null hypothesis that, "Designation is an influencing factor on the opinion of users about the adequacy of digital libraries," tends to be accepted.

Hypothesis 5: There exists significant relationship between the effective use of library resources in an IT era and user education programme.

Respondents were asked to state whether there is a need for user education programmes in the effective use of library resources in an IT era and have attended any training programme on searching e-resources. The empirical data revealed surprisingly that, the large number 297(71.22%) of respondents have not attended such training programme. But, there are 120(28.78%) of the respondents who have attended such training programme. Further, the study has revealed that a large majority 371(88.97%) of the respondents opined that user education program is necessary for the effective use of library resources. As many as 58(96.70%) postgraduates, 98(92.50%) faculty members, and 215(85.70%) undergraduates have categorically opined the same. However, only 46(11.03%) of the respondents from the entire sample mentioned that there is no need for the user education programs to use the library resources effectively. The analytical result of empirical data is presented in Table 5.63 and 5.68.The higher percentage of response towards the need of training or user education programme for the effective use of library resources proves that the study hypothesis is valid and sustained.

13. Suggestions

The study on information seeking behaviour of pharmaceutical science library users recommends the following as suggestions to improve the library services and facilities.

13.1 Information literacy classes in academic curriculum

The first suggestion for the pharmaceutical science institutions is to embed information literacy classes within the academic curriculum to enable and encourage successful information seeking methods so that relevancy to teaching and learning needs becomes the focus. If this is done in a seamless manner, that would be excellent for providing support in overcoming the technology barrier. Continued maintenance of the contents of the library's website so that it is easier to navigate can also in a way enable and encourage library users to search for information independently.

13.2 Libraries to work with faculty members

Furthermore, the study suggests for pharmaceutical science institute libraries to work with faculty members so that the latter encourage students to contact the library for any type of quires related to their academic courses. That will give a chance to demonstrate that the library and the faculty have the same end goal in the academic course for students and researchers.

13.3 To treat libraries and information centers considered in main stream

It is noticed that most of the pharmaceutical science institutions do not consider the library as an important part of the institute. It is treated as a necessary component to maintain the decorum of the institute rather than consider it as a brain for the academic growth of the institute and the students. In this regard, the study recommends the pharmaceutical science institutions to consider bringing the library and its staff members into the main stream which will help the libraries in providing better and innovative information services to its users.

13.4 To consider the relevance and importance of online databases to the academic curriculum for UG and PG students.

There is a need to reconsider the relevance of online databases to the curriculum. As an outcome of the study, to fulfill the information needs of the students, it was observed that the ICT has influenced the students information seeking habits, but the use of online databases with undergraduate respondents was not up to the mark. They opined that the present databases does not give answers for syllabus related problems or doubts. As we know the present online databases contain only research oriented articles which are not very useful for academic institutions, especially for the undergraduate students. Therefore, the study recommends having separate curriculum based databases to suit the requirements of undergraduate and postgraduate courses.

13.5 To improve the reprographic facilities and services in the libraries

It is interesting to note that the study revealed negative results on the adequacy of reprographic facilities provided by the respective libraries. Users are unhappy with the high charges levied by the institute and working hours of the photocopy centre. Hence, it is suggested to improve the quality of Xerox facility and to provide the service with nominal charges for the institute members.

13.6 To provide more number of computers in the library with internet facility

It has been found that a many of the respondents prefer the internet as their main channel of information seeking, since by this method users can get advanced, updated information related to their field of interest very speedily. It is observed that respondents who visit the library to use the computer are less. This may be because in most of the libraries under study have less number of computers with internet connectivity. Since the advance technology plays a major role in information seeking, libraries should provide a separate section for internet with a number of well configured computers with high speed permanent internet connections.

13.7 To evaluate the library services and facilities regularly to meet the changing need of users.

After provisioning the entire basic infrastructure, facilities, services, and resources, the library should judge its performance in accordance with the user needs and demands through some evaluation processes. The staff members of the respective library and information centre should be aware of the current needs of their users, which may vary from one library to another and from time to time. Therefore, carrying out regular surveys on user needs at regular intervals on various aspects of library usage will be an invaluable guide in determining the future direction of library developments.

13.8 Respondent's suggestion

As a final part of the questionnaire the respondents were asked to suggest ways for the improvement of the library from the view point of their academic needs and strengthening the security measures. The respondents co-operated in this respect on the understanding that their opinions would be kept confidential. Several respondents were very frank and free in expressing their opinions on different aspects concerning this study. As the answers are not convenient to present in a tabular form, some important suggestions are presented here.

- ❖ To organize and display library resources for easy access and frequent checking, re-shelving of books is essential.
- ❖ Effort should be made to reduce the time needed in acquisition and processing of new documents.
- ❖ Latest books should be acquired for the library soon after its publication.
- ❖ Information regarding new arrivals should be communicated promptly.
- ❖ Adequate copies of text books for lending are required.
- ❖ Extension of time for issue / returns of books should be provided throughout library working hours.
- ❖ More attention should be paid to acquire conference/seminar proceedings concerned with research work.

- ❖ Missing issues and volumes in bound volumes of periodical should be filled up.
- ❖ Title of the journal should be written on the spine of the bound volume of the periodical.
- ❖ Print journals discontinued due to various reasons should be re-subscribed.
- ❖ More number of foreign periodicals should be subscribed.
- ❖ Separate section should be provided for research scholars and faculty members.
- ❖ Convenient furniture should be provided in the library.
- ❖ Library should be fully air conditioned.
- ❖ Prompt and proper photo copy service should be provided at reasonable cost when compared with market rates.
- ❖ Library staff should be more service minded and come forward to help readers.
- ❖ Advance technology (RFID) may be used at exit counter instead of manual checking to avoid wasting time.

14. Organisations of the study

The results of the study are provided in the form of a report consisting of six chapters.

Chapter I being introductory **introduces** the research theme, meaning and definition of the concepts. It states and lists the need and purpose, objectives and hypotheses of the study. Finally, it focuses on the scope with its limitations and significance of the study. A brief summary of the remaining chapters is also provided in this chapter.

Chapter II briefly discusses the **methods** adopted and materials used for the data collection, analysis, and for reporting of the thesis.

Chapter III attempts to present a **review of the literature** about the studies by using different sources of information regarding information need and information seeking pattern of the users. The literature search has been carried out by the researcher from the beginning stage of the research till the completion of the research work. The literature review has been divided in to various sub-sections to cover the different aspects of the information seeking behaviour of the users and related issues.

Chapter IV gives **physiographical and demographical features** of the pharmaceutical science institutions of South Kanara and Udupi districts, wherein a brief description of the institutional background, growth, collection, development, and budget allocation for library infrastructure and facilities is presented.

Chapter V is the core of the research that is **data analysis and interpretation**. It attempts to present primary data about the information seeking pattern of the pharmaceutical science library users of the institutions. The data collected has been structured, analyzed, and presented with interpretations in the light of the objectives.

Chapter VI Findings, Suggestions, and Conclusion, it provided an opinion survey of the user's information needs, use pattern, and information seeking behaviour and services provided by the library, etc. On the basis of the data analysis and research findings, a final conclusion is drawn along with important suggestions and recommendations. It further attempts to point out some research problems relating to this field for future research.

15. Conclusion

The study "Information seeking behaviour of users in the pharmaceutical science college libraries of South Kanara and Udupi districts: A study" has been conceived to determine the information needs and information gathering habits of users in the colleges of pharmaceutical sciences. The result of this survey discloses that the pharmaceutical

science users seek diverse information from various sources, both print and non-print. A well-equipped library with up-to-date collection, organized on modern lines is a sine-quo-non for study and research in any discipline, particularly in the field of applied sciences like drugs and pharmaceutical sciences. Hence, the study has revealed that there is an indispensible role for a library to play as an information centre with efficient library services with a professional librarian to fulfill the user's curricular research and informational requirements. E-resources, internet, and online information databases are becoming a valuable asset in any library and information centre. However, in addition to this it is important to note that in this IT and networked era a significant percentage of respondents also need and depend on the print resources in their libraries.

The users have also opined that they are more concerned about accuracy, easy accessibility, relevancy and usefulness of the information they get while searching for information. Due to their frustration because of non-availability and incompleteness of information, they judged the collection of book and journals, both print and online, and services such as current awareness service, ILL service, reference service, as average. Since awareness of the library resources, their usage and easy accessibility are the main problem they recommended user orientation programs to educate them in using the library resources.

The findings of this study also indicate that the successful operation of a library depends to a large extent on the choice of library collections. The collection should meet the needs and requirements of the users. Consequently, librarians must be aware of how and what type of information the users need. Knowledge of user information needs and information-seeking behaviour is imperative for developing a valuable collection, and improving the facilities and services which needs periodic user surveys and studies. It is recommended that the library staff focus on assisting users to develop abilities to search their relevant information retrieval practices. The results of the study support previous studies, which have also found that the place of libraries is now being replaced by IT and internet and e-resources. The modern digital libraries, interfaces, and web database sources are also important factors that contribute in a big way to developing a students'

behaviour. This study can be helpful for the students, researchers, faculty members as well as for the library and information professionals.

It is found that the library must fundamentally change the way it sees itself in relation to the faculty and perhaps other user groups as well. Libraries must acknowledge that they are not the only source of information for their users: patrons find the information they need through a variety of methods and in many places, besides the library. If libraries wish to make library resources and services more valuable to the users, they would do well to revise their library-centric view and instead, integrate resources and services into their users' work lives.

It is apparent that the study has revealed that libraries need to reorient and provide both online and offline library services by conducting periodic surveys and studies to fulfill the gap between the perception and the satisfaction level among the users in this era of networking and knowledge society. To conclude, information is an important asset in today's society. Hence, the LIC'S in the colleges under study has to reorient their libraries and information services so as to provide optimum satisfactory services to the user community by removing any possible hindrances in their information seeking and improving the quality of library and information services.

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